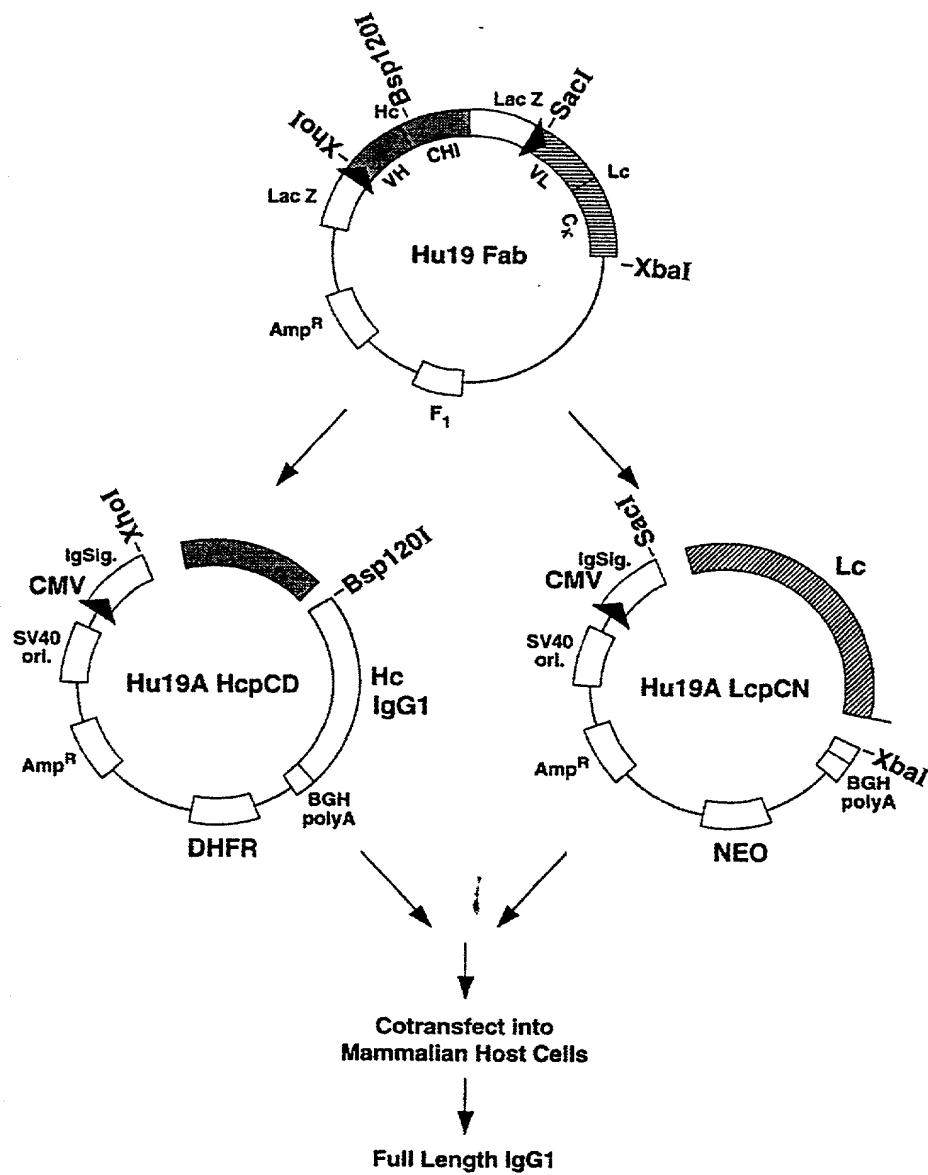


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FIGURE 1

Conversion of Hu19 Fab to a Complete IgG1 mAb



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Figure 2

Comparison of the Heavy Chain Amino Acid Sequences of various Hu19 mAbs

**

GL Dp58:	EVQL VESGGGLVQPGGSLRLSCAASGFTFS	30
19A:	MGWSCIILFLVATATGVHS----LE-----R-----T-L-	
19B:	-EFGLSWV----LLR--QCQVQL V-----	
19C:	-----	
19D:	-----	

	CDR1	CDR2	
	-----	-----	
GL Dp58	SYEMNWVRQAPGKGLEWVSYISSSGSTIYYADSVKGRFTISRDNAKNSLY		80
19A	G-T-H-----S-TGGSNF-N-S-----		
19B	-----		
19C:	-----A-----		
19D:	-----Q-S-----		

	CDR3	

GL: Dp58	LQMNSLRAEDTAVYYCAR 9 ⁸	(SEQ ID NO: 4)
19A:	-----T-----TAPIAPPYFDHWGQGLVTVSS	(SEQ ID NO: 5)
19B:	-----	(SEQ ID NO: 6)
19C:	-----	(SEQ ID NO: 7)
19D:	-----	(SEQ ID NO: 8)

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Figure 3

Comparison of the Light Chain Amino Acid Sequences of various Hu19 mAbs

A. Leader and Variable

	CDR1	

GL Dpk9:	DIQMTQSPSSLSASVGDRVTITCRASQ Q SIS	30
19A:	MGWSCIILFLVATATGVHS EL-----T--V-	28
19B,C,D:	MRVPAQLLGLLLLWLRLGARC D IQM-----	
	CDR2	

GL Dpk9:	SYLNWYQQKPGKAPKLLIYA A SSLQSGVPSRFSGSGSGTDFTLTISSLQP	80
19A:	NFLN-----E--T---D--TS-----M--S-----	78
19B,C,D:	-----	
	CDR3	

GL Dpk9:	EDFATYYC *	(SEQ ID NO: 9)
19A:	--L-M---QASINTPLFGGGTRIDMRR 105	(SEQ ID NO: 10)
19B,C,D:	-----	(SEQ ID NO: 11)

B. Constant Region (Ck)

Hu-k,19C,D:	TVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYPREAKVQWKVDNALQSGN
19A,B:	-----
Hu-k,19C,D	SQESVTEQDSKSTYSLSSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKS
19A,B:	-----L-----
Hu-k,19C,D	FNRGEC (SEQ ID NO: 12)
19A,B	----- (SEQ ID NO: 13)

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Figure 4

Figure 4A-- DNA sequence of the plasmid Hu19AHcpd

1 gacgtcgcgccgctctaggcctcaaaaaagcctcctcactacttcttg 50

51 aatagctcagaggccgagggcgccctcggcctctgcataaataaaaaaat 100

101 tagtcagccatgcatggggcggagaatgggcggaactgggcggagttagg 150

151 ggcgggatgggcggagttagggcgggactatggttgctgactaattgag 200

201 atgcatgctttgcatacttctgcctgctggggagcctggggactttccac 250

251 acctggttgctgactaattgagatgcatgctttgcatacttctgcctgct 300

301 ggggagcctggggactttccacaccctaactgacacacattccacagaat 350

351 taattcccggggatcgatccgtcgacgtacgactagttattaatagtaat 400

401 caattacggggtcattagttcatagcccatatatggagttccgcgttaca 450

451 taacttacggtaaatggccgcctggctgaccgccaacgacccccgccc 500

501 attgacgtcaataatgacgtatgttcccatagtaacgccaatagggactt 550

551 tccattgacgtcaatgggtggactatttacggtaaactgccacttggca 600

601 gtacatcaagtgtatcatatgccaaagtacgccccctattgacgtcaatga 650

651 cggtaaattggccgcctggcattatgccagttacatgaccttatgggact 700

701 ttctacttggcagttacatctacgtattagtcacgtctattaccatggtg 750

751 atgcggttttggcagttacatcaatggcggtggatagcggtttgactcacg 800

5/31

801 gggatttccaagtctccacccattgacgtcaatgggagtttgttttggc 850

851 accaaaatcaacgggactttccaaaatgtcgtacaactccgccccattg 900

901 acgcaaattgggcggtaggcgtgtacggtgggaggtctatataagcagagc 950

Eco RI

951 tgggtacgtgaaccgtcagatcgctggagacgccatcgaattctgagca 1000

1001 cacaggacctcaccatgggatggagctgtatcatcctcttcttggtagca 1050

M G W S C I I L F L V A

Leader start

1051 acagctacaggtgtccactccgaggtccaactgctcgaggagtctggggg 1100

T A T G V H S E V Q L L E V - (SEQ ID NO: 15)

Processed N-term.

1101 aggcctggtcaggcctggcggtccctaagactctcgtgtgcagcctctg 1150

1151 gaaccaccctcagtggtatataccatgcactgggtccgccagggtccaggg 1200

1201 aaggggctggagtgggtctcatccattactggaggtagcaacttcataaa 1250

1251 ctactcagactcagtgaagggccgattcaccatctccagagacaacgcca 1300

1301 agaactcactttatctgcaaataaacagcctgacagccgaggacacggct 1350

1351 gtctattattgtgacgaccccttatagcaccgccctactttgaccactg 1400

1401 gggccagggaaccctgggtcacgtctcctcagcctccaccaaggggcccat 1450

1451 cgggtcttccccctggcacccctcctccaagagcacctctgggggcacagcg 1500

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1501 gccctgggctgcctgggtcaaggactacttccccgaaccggtgaccgtgtc 1550
1551 gtggaactcaggcgccctgaccagcggcgtgcacaccttccccggtgtcc 1600
1601 tacagtcttcaggactctactccctcagcagcgtggtgactgtgccctcc 1650
1651 agcagcttgggcacccagacctacatctgcaacgtgaatcacaagcccag 1700
1701 caacaccaaggtggacaagaaagttgagcccaaattctgtgacaaaactc 1750
1751 acacatgccccaccgtgcccgacacctgaactcctggggggaccgtcagtc 1800
1801 ttctcttccccccaaaacccaaggacacctcatgatctcccggaacccc 1850
1851 tgaggtcacatgcgtgggtgggtggacgtgagccacgaagacctgagggtca 1900
1901 agttcaactggtacgtggacggcgtggagggtgcataatgccaaagaaaag 1950
1951 ccgcgaggaggagcagtacaacagcacgtaccgggtgggtcagcgtcctcac 2000
2001 cgtcctgcaccaggactgggtgaatggcaaggagtacaagtgaagggtct 2050
2051 ccaacaaagccctcccagcccccatcgagaaaaccatctccaaagccaaa 2100
2101 gggcagccccgagaaccacaggtgtacacctgcccccatcccgggatga 2150
2151 gctgaccaagaaccagggtcagcctgacctgcctgggtcaaaggcttctatc 2200
2201 ccagcgacatcgccgtggagtgggagagcaatgggcagccggagaacaac 2250
2251 tacaagaccacgcctcccggtgctggactccgacggctccttcttctctta 2300
2301 cagcaagctcacgtggacaagagcaggtggcagcaggggaacgtcttct 2350

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2351 catgctccgtgatgcatgaggctctgcacaaccactacacgcagaagagc 2400

2401 ctctccctgtctccgggtaaatgatagatatctacgtatgatcagcctcg 2450
S P G K * end of heavy chain (SEQ ID NO: 16)

2451 actgtgccttctagttgccagccatctgttgtttgccctcccccggtgcc 2500

2501 ttccttgaccctggaaggtgccactcccactgtcctttcctaataaaaatg 2550

2551 aggaaattgcatcgcatgtgtctgagtaggtgtcattctattctggggggt 2600

2601 ggggtggggcaggacagcaagggggaggattgggaagacaatagcaggca 2650

2651 tgctggggatgcggtgggctctatggaaccagctggggctcgacagcgct 2700

2701 ggatctcccgatccccagctttgcttctcaatttcttatttgcataatga 2750

2751 gaaaaaaaggaaaattaattttaacaccaattcagtagttgattgagcaa 2800

2801 atgcgttgccaaaaggatgctttagagacagtgttctctgcacagataa 2850

2851 ggacaaacattattcagagggagtaccagagctgagactcctaagccag 2900

2901 tgagtggcacagcattctagggagaaatatgcttgtcatcaccgaagcct 2950

2951 gattccgtagagccacaccttggttaagggccaatctgctcacacaggata 3000

3001 gagagggcaggagccagggcagagcatataaggtgaggtaggatcagttg 3050

3051 ctcttcacatttgcttctgacatagttgtgttgggagcttgatagcttg 3100

3101 gacagctcagggtgcgatttctgcgcgcaaacttgacggcaatcctagcgt 3150

3151 gaaggctggtaggattttatccccgctgccatcatggttcgaccattgaa 3200

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3201 ctgcatcgctcgccgtgtcccaaaatatggggattggcaagaacggagacc 3250
3251 taccctggcctccgctcaggaacgagttcaagtacttccaaagaatgacc 3300
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3451 cttgccaaaagtttggtgatgccttaagacttattgaacaaccggaatt 3500
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3551 aggaagccatgaatcaaccaggccaccttagactctttgtgacaaggatc 3600
3601 atgcaggaatttgaaagtgcacgtttttccagaaattgatttggggaa 3650
3651 atataaacttctcccagaataccaggcgctcctctctgaggtccaggagg 3700
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3851 agttgccagccatctgttgtttgcccctccccgtgccttccttgacct 3900
3901 ggaaggtgccactcccactgtcctttcctaataaaaatgaggaaattgcat 3950
3951 cgcattgtctgagtaggtgtcattctattctggggggtgggtggggcag 4000
4001 gacagcaagggggaggattgggaagacaatagcaggcatgctggggatgc 4050

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4051 ggtgggctctatggaaccagctggggctcgatcgagtgtatgactgcggc 4100
4101 cgcgatcccgctcgagagcttgcgtaatacatggcatagctgtttcctgt 4150
4151 gtgaaattgttatccgctcacaattccacacaacatacgagccggaagca 4200
4201 taaagtgtaaagcctggggcgctaatactgagtgagctaactcacattaatt 4250
4251 gcgttgcgctcactgcccgcgtttccagtcgggaaacctgtcgtgccagct 4300
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4351 gctcttcgcttcctcgtcactgactcgctgcgctcggtcgttcggctg 4400
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4651 tgcgctctcctgttccgacctgcgcgttacgggatacctgtccgccttt 4700
4701 ctcccttcgggaagcgtggcgctttctcaatgctcacgctgtaggtatct 4750
4751 cagttcggtgtaggtcgttcgctccaagctgggctgtgtgcacgaacccc 4800
4801 ccgttcagcccagccgctgcgccttatccggtaactatcgtcttgagtcc 4850
4851 aaccgcgtaagacacgacttatcgccactggcagcagccactggtaacag 4900

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4901 gatttagcagagcgaggtatgtaggcggtgctacagagttcttgaagtgg 4950
4951 ggctaactacggctacactagaaggacagtatttggtatctgcgctctg 5000
5001 ctgaagccagttaccttcggaagagagttggtagctcttgatccggcaa 5050
5051 acaaaccaccgctggtagcggtggttttttgtttgcaagcagcagatta 5100
5101 cgcgagaaaaaaaggatctcaagaagatcctttgatcttttctacggg 5150
5151 tctgacgctcagtggaaacgaaaactcacgttaagggattttggtcatgag 5200
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5251 tttaatcaatctaaagtatatatgagtaaacttggtctgacagttaccaa 5300
5301 tgcttaatcagtgaggcacctatctcagcgatctgtctatttcgttcac 5350
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5451 gctccagatttatcagcaataaaccagccagccggaaggccgagcgcag 5500
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5551 gggaagctagagtaagtagttcgccagttaatagtttgcgcaacgttggt 5600
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5651 attcagctccggttcccaacgatcaaggcgagttacatgatcccccattgt 5700
5701 tgtgcaaaaaagcggttagctccttcggtcctccgatcgttggtcagaagt 5750

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5751 aagttggcgcagtggttatcactcatggttatggcagcactgcataattc 5800
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5851 caaccaagtcattctgagaatagtgtatgcggcgaccgagttgctcttgc 5900
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5951 gctcatcattggaaaacgttcttcggggcgaaaactctcaaggatcttac 6000
6001 cgctgttgagatccagttcgatgtaaccactcgtgcaccaactgatct 6050
6051 tcagcatcttttactttcaccagcgtttctgggtgagcaaaaacaggaag 6100
6101 gcaaaatgccgcaaaaaaggaataagggcgacacggaatgttgaatac 6150
6151 tcatactcttcctttttcaatattattgaagcatttatcagggttattgt 6200
6201 ctcatgagcggatacatatttgaatgtatttagaaaaataaacaatagg 6250
6251 ggttccgcgcacatttccccgaaaagtgccact 6284 (SEQ ID NO:14)

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Figure 4B-- DNA sequence of the plasmid Hu19ALcpn:

1 gacgtcgccggccgctctaggcctccaaaaagcctcctcactacttctgg 50
51 aatagctcagaggccgaggcgccctcggcctctgcataaataaaaaaat 100
101 tagtcagccatgcatggggcggagaatggcggaactggcgaggagttagg 150
151 ggcgggatggcgaggagttagggcgggactatggttgctgactaattgag 200
201 atgcatgctttgcatacttctgcctgctggggagcctggggactttccac 250
251 acctggttgctgactaattgagatgcatgctttgcatacttctgcctgct 300
301 ggggagcctggggactttccacaccctaactgacacacattccacagaat 350
351 taattcccggggatcgatccgtcgacgtacgactagttattaatagtaat 400
401 caattacggggtcattagttcatagcccatatatggagttccgcgttaca 450
451 taacttacggtaaatggcccgctggctgaccgccaacgacccccgccc 500
501 attgacgtcaataatgacgtatgttcccatagtaacgccaatagggactt 550
551 tccattgacgtcaatgggtggactatttacggtaaactgccacttggca 600
601 gtacatcaagtgtatcatatgccagtagcggccctattgacgtcaatga 650
651 cggtaaatggcccgctggcattatgccagtagcatgaccttatgggact 700
701 ttcctacttggcagtagcatctacgtattagtcacgctattaccatgggtg 750
751 atgcgggttttggcagtagcatcaatgggcgtggatagcggtttgactcag 800

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801 gggattttccaagtctccaccccattgacgtcaatgggagtttgttttggc 850

851 accaaaatcaacgggactttccaaaatgtcgtaacaactccgccccattg 900

901 acgcaaattgggcggtaggcgtgtacggtgggaggtctatataagcagagc 950

Eco RI

951 tgggtacgtgaaccgtcagatcgccctggagacgccatcgaattctgagca 1000

1001 cacaggacctcaccatgggatggagctgtatcatcctcttcttggttagca 1050

M G W S C I I L F L V A

Leader start

1051 acagctacaggtgtccactccgagctcaccagctctccatcctccctgtc 1100

T A T G V H S E L T Q S P - (SEQ ID NO: 18)

Processed N-term.

1101 tgcattctgtaggagacagagtcaccatcacttgccgggcaactcagagtg 1150

1151 ttagtaactttttaaattgggtatcagcagaagccaggggaagccctacg 1200

1201 ctctgatctatgatgcattcgcgaaagtggggtcccatcaagggt 1250

1251 cagtggcagtggtatctgggatgatttcagtctcaccatcagcagtcctgc 1300

1301 agcctgaagatcttgcaatgtattactgtcaagcgagtatcaataccccg 1350

1351 cttttcggcggaggaccagaatagatatgagacgaactgtggctgcacc 1400

1401 atctgtcttcatcttcccgccatctgatgagcagttgaaatctggaactg 1450

1451 cctctgttggtgcctgctgaataacttctatccagagaggccaaagta 1500

1501 cagtggaagggtggataacgcctccaatcgggtaactcccaggagagtggt 1550

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1551 cacagagcaggacagcaaggacagcacctacagcctcagcagcacccctga 1600

1601 cgctgagcaaagcagactacgagaaacacaaagtctacgcctgcgaagtc 1650

1651 acccatcagggcctgagcttgcccgtcacaaagagcttcaacaggggaga 1700

L P V T K S F N R G E

Xba I

1701 gtgttagtgagatgatcctctagagtcattctacgtatgatcagcctcgac 1750

C * end of light chain (SEQ ID NO: 19)

1751 tgtgccttctagttgccagccatctgttgtttgcccctcccccgctgctt 1800

1801 ccttgaccctggaaggtgccactcccactgtcctttcctaataaaatgag 1850

1851 gaaattgcatcgcatgtgtgtagtaggtgtcattctattctgggggggtgg 1900

1901 ggtggggcaggacagcaagggggaggattgggaagacaatagcaggcatg 1950

1951 ctgggggatgcggtgggctctatggaaccagctggggctcgacagctcgag 2000

2001 ctagctttgcttctcaatttcttatttgcataatgagaaaaaaggaaaa 2050

2051 ttaattttaacaccaattcagtagttgattgagcaaatgcgttgccaaaa 2100

2101 aggatgctttagagacagtgttctctgcacagataaggacaaacattatt 2150

2151 cagagggagtacccagagctgagactcctaagccagtgagtggcacagca 2200

2201 ttctagggagaaatatgcttgtcatcacgaagcctgattccgtagagcc 2250

2251 acaccttggttaagggccaatctgctcacacaggatagagagggcaggagc 2300

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2301 cagggcagagcatataaggtgaggtaggatcagttgctcctcacatttgc 2350
2351 ttctgacatagttgtgttgggagcttggatcgatccaccatggttgaaca 2400
2401 agatggattgcacgcaggtttctccggccgcttgggtggagaggctattcg 2450
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3001 tggattcatcgactgtggccggctgggtgtggcggaccgctatcaggaca 3050
3051 tagcgttggctacccgtgatattgctgaagagcttggcggcgaatgggct 3100

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3101 gaccgcttcctcgtgctttacgggtatcgccgctcccgattcgagcgcat 3150
3151 cgccttctatcgcttcttgacgagttcttctgagcgggactctgggggtt 3200
3201 cgaaatgaccgaccaagcgacgccaacctgccatcacgagatttcgatt 3250
3251 ccaccgccgccttctatgaaagggtgggcttcggaatcgttttccgggac 3300
3301 gccggctggatgatcctccagcgcggggatctcatgctggagttcttcgc 3350
3351 ccaccccaacttgtttattgcagcttataatggttacaataaagcaata 3400
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3451 ggtttgtccaaactcatcaatgtatcttatcatgtctggatcgcgccgc 3500
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3951	cctgacgagcatcacaaaaatcgacgctcaagtcagaggtggcgaaaccc	4000
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4051	gctctcctgttccgaccctgccgcttacccgatacctgtccgcctttctc	4100
4101	ccttcggaagcgtggcgcttttctcaatgctcacgctgtaggtatctcag	4150
4151	ttcgggtgtaggtcgttcgctccaagctgggctgtgtgcacgaaccccccg	4200
4201	ttcagccccgaccgctgcgccttatccggtaactatcgtcttgagtccaac	4250
4251	cggtaagacacgacttatcgccactggcagcagccactggtaacaggat	4300
4301	tagcagagcgaggtatgtaggcgggtctacagagttcttgaagtgggtggc	4350
4351	ctaactacggctacactagaaggacagtatttgggtatctgcgctctgctg	4400
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4551	gacgctcagtggaacgaaaactcacgttaagggatttttggtcatgagatt	4600
4601	atcaaaaaggatcttccactagatccttttaaatataaaaatgaagtttta	4650
4651	aatcaatctaaagtatatatgagtaaacttgggtctgcaggttaccaatgc	4700
4701	ttaatcagtgaggcacctatctcagcgatctgtctatttcgttcatccat	4750
4751	agttgacctgactccccgtcgtgtagataactacgatacgggagggttac	4800

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4801 catctggccccagtgctgcaatgataccgagagacccacgctcaccggct 4850
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4951 aagctagagtaagtagttcgccagttaatagtttgcgcaacgttggtgcc 5000
5001 attgctacaggcatcggtgtgcacgctcgctggttggtatggcttcatt 5050
5051 cagctccggttcccaacgatcaaggcgagttacatgatccccatgttgt 5100
5101 gcaaaaaagcggttagctccttcggctcctccgatcggtgtcagaagtaag 5150
5151 ttggccgcagtggttatcactcatggttatggcagcactgcataattctct 5200
5201 tactgtcatgccatccgtaagatgcttttctgtgactggtgagtactcaa 5250
5251 ccaagtcattctgagaatagtgtatgcgggcgaccgagttgctcttgcccg 5300
5301 gcgtcaatacgggataataaccgcccacatagcagaactttaaaagtgt 5350
5351 catcattggaaaacgttcttcggggcgaaaactctcaaggatcttaccgc 5400
5401 tggttgagatccagttcgatgtaacccactcggtgcacccaactgatcttca 5450
5451 gcatcttttactttcaccagcggtttctgggtgagcaaaaacaggaaggca 5500
5501 aaatgccgcaaaaaagggaataagggcgacacggaaatggtgaataactca 5550
5551 tactcttcctttttcaatattattgaagcatttatcaggggttattgtctc 5600
5601 atgagcgggatacatatttgaatgtatttagaaaaataaacaataggggt 5650
5651 tccgcgcacatttccccgaaaagtgccacct 5681 (SEQ ID NO: 17)

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Figure 4C Heavy chain coding sequence in the plasmid Hu19BHcpd

Eco RI
gaattcggtacc 1000

1001 atggagtttgggctgagctgggttttctcgtggctcttttaagaggtgt 1050
M E F G L S W V F L V A L L R G V
Leader start

1051 ccagtgtcaggtgcagctgggtggagtctgggggaggcctggtcaggcctg 1100
Q C Q V Q L V - (SEQ ID NO: 21)
Processed N-term

1101 gcgggtccctaagactctcgtgtgcagcctctggaaccaccctcagtggc 1150

1151 tataccatgcactgggtccgccaggctccaggaaggggctggagtgggt 1200

1201 ctcattccattactggaggtagcaacttcataaactactcagactcagtga 1250

1251 agggccgattcaccatctccagagacaacgccaagaactcactttatctg 1300

1301 caaatgaacagcctgacagccgaggacacggctgtctattattgtgcgac 1350

1351 cgccccatatagcaccgccctactttgaccactggggccagggaaacctgg 1400

1401 tcaccgtctcctcagcctccaccaagggcccatcggtcttccccctggca 1450

1451 ccctcctccaagagcacctctgggggcacagcgccctgggctgcctggt 1500

1501 caaggactacttccccgaaccggtgaccgtgtcgtggaactcaggcgccc 1550

1551 tgaccagcggcgtgcacaccttcccggtgtcctacagtccctcaggactc 1600

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1601 tactccctcagcagcgtggtgaccgtgccctccagcagcttgggcaccca 1650
1651 gacctacatctgcaacgtgaatcacaagcccagcaacaccaaggtggaca 1700
1701 agaaagttgagcccaaattcttgtgacaaaactcacacatgccacacgtgc 1750
1751 ccagcacctgaactcctggggggaccgtcagttcttcttccccccaaa 1800
1801 acccaaggacaccctcatgatctcccgaccctgaggtcacatgcgtgg 1850
1851 tgggtggacgtgagccacgaagaccctgaggtcaagttcaactggtacgtg 1900
1901 gacggcgtggaggtgcataatgccaaagacaaagccgaggagcagta 1950
1951 caacagcacgtaccgggtggtcagcgtcctcacgtcctgcaccaggact 2000
2001 ggctgaatggcaaggagtacaagtgaaggtctccaacaaagccctcca 2050
2051 gcccccatcgagaaaaccatctccaaagccaaagggcagccccgagaacc 2100
2101 acaggtgtacaccctgcccccatcccggtatgagctgaccaagaaccagg 2150
2151 tcagcctgacctgcctggtcaaaggcttctatcccagcgacatcgccgtg 2200
2201 gagtgggagagcaatgggcagccggagaacaactacaagaccacgcctcc 2250
2251 cgtgctggactccgacggctccttcttctctacagcaagctcacctgg 2300
2301 acaagagcaggtggcagcaggggaacgtcttctcatgctccgtgatgcat 2350
2351 gaggctctgcacaaccactacacgcagaagagcctctccctgtctccggg 2400

S P G

2401 taaatgatagatatc - (SEQ ID NO:20)

K * end of heavy chain

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Figure 4D Light chain coding sequence in the plasmid Hu19BLcpn

Eco RI
gaattccatgga 1000

1001 catgaggggtccccgctcagctcctagggctcctgctgctctggctccgag 1050
M R V P A Q L L G L L L L W L R
Leader start

1051 gtgccagatgtgacatccagatgaccagctctccatcctccctgtctgca 1100
G A R C D I Q M T - (SEQ ID NO: 23)
Processed N-term

1101 tctgtaggagacagagtcaccatcacttgccgggcaactcagagtgttag 1150

1151 taactttttaaattggtatcagcagaagccaggggaagcccctacgctcc 1200

1201 tgatctatgatgcatccacttcgcaaagtgggggtcccatcaaggttcagt 1250

1251 ggcagtggtatctgggatggatttcagtctcaccatcagcagctctgcagcc 1300

1301 tgaagatcttgcaatgtattactgtcaagcgagtatcaataccccgcttt 1350

1351 tcggcggagggaccagaatagatgatgagacgaactgtggctgcaccatct 1400

1401 gtcttcatcttcccgccatctgatgagcagttgaaatctggaactgcctc 1450

1451 tgttgtgtgcctgctgaataacttctatcccagagaggccaaagtacagt 1500

1501 ggaaggtggataacgcctccaatcgggtaactcccaggagagtgtcaca 1550

1551 gagcaggacagcaaggacagcacctacagcctcagcagcaccctgacgct 1600

1601 gagcaaagcagactacgagaaacacaaagtctacgcctgcgaagtcaccc 1650

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1651 atcagggcctgagcttgcccgtcacaaagagcttcaacaggggagagtgt 1700

L P V T K S F N R G E C (SEQ NO: 24)

Xba I

1701 tagtgagatgatcctctaga (SEQ ID NO: 22)

* end of light chain

200000-66299001

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Figure 4E Heavy chain coding sequence in the plasmid Hu19CHcpd

Eco RI
gaattcgggtacc 1000

1001 atggagtttgggctgagctgggttttctcgtggctcttttaagaggtgt 1050
M E F G L S W V F L V A L L R G V

1051 ccagtgtcaggtgcagctgggtggagtctgggggaggcctggtcaggcctg 1100
Q C Q V Q L V - (SEQ ID NO: 21)
Processed N-term

1101 gcgggtccctaagactctcgtgtgcagcctctggaaccaccctcagtggc 1150

1151 tataccatgcactgggtccgccaggctccaggaaggggctggagtgggt 1200

1201 ctcattccattactggaggtagcaacttcataaactacgcagactcagtga 1250
S N F I N Y A - (SEQ ID NO: 26)

1251 agggccgattcaccatctccagagacaacgccaagaactcactttatctg 1300

1301 caaatgaacagcctgacagccgaggacacggctgtctattattgtgcgac 1350

1351 cgcccctatagcaccgccctactttgaccactggggccaggaaccctgg 1400

1401 tcaccgtctcctcagcctccaccaagggcccatcggtcttccccctggca 1450

1451 ccctcctccaagagcacctctgggggcacagcgccctgggctgcctggt 1500

1501 caaggactacttccccgaaccggtgaccgtgtcgtggaactcaggcgccc 1550

1551 tgaccagcggcggtgcacaccttcccggtgtcctacagtcctcaggactc 1600

1601 tactccctcagcagcgtggtgaccgtgcctccagcagcttgggcaccca 1650

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1651 gacctacatctgcaacgtgaatcacaagcccagcaacaccaaggtggaca 1700
1701 agaaagttgagcccaaatcttgtgacaaaactcacacatgccaccgtgc 1750
1751 ccagcacctgaactcctggggggaccgtcagtccttcctcttcccccaaa 1800
1801 acccaaggacaccctcatgatctcccggaacctgaggtcacatgcgtgg 1850
1851 tgggtggacgtgagccacgaagacctgaggtcaagttcaactggtacgtg 1900
1901 gacggcgtggaggtgcataatgccaagacaaagccgaggaggagcagta 1950
1951 caacagcacgtaccgggtgggtcagcgtcctcacgtcctgcaccaggact 2000
2001 ggctgaatggcaaggagtacaagtgaaggtctccaacaaagccctccca 2050
2051 gcccccatcgagaaaaccatctccaaagccaaagggcagccccgagaacc 2100
2101 acaggtgtacaccctgcccccatcccggtgatgagctgaccaagaaccagg 2150
2151 tcagcctgacctgcctgggtcaaaggcttctatcccagcgacatcgccgtg 2200
2201 gagtgggagagcaatgggcagcgggagaacaactacaagaccacgcctcc 2250
2251 cgtgctggactccgacggctccttcttctctacagcaagctcacctgg 2300
2301 acaagagcaggtggcagcaggggaacgtcttctcatgctccgtgatgcat 2350
2351 gaggtctgcacaaccactacacgcagaagagcctctccctgtctccggg 2400

S P G

2401 taaatgatagatatc - (SEQ ID NO: 25)

K * end of heavy chain

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Figure 4F Heavy chain coding sequence in the plasmid Hu19DHcpd

Eco RI
gaattcggtacc 1000

1001 atggagtttgggctgagctgggttttctcgtggctcttttaagaggtgt 1050
M E F G L S W V F L V A L L R G V

1051 ccagtgtcaggtgcagctgggtggagtctggggaggcctggtcaggcctg 1100
Q C Q V Q L V - (SEQ ID NO: 21)
Processed N-term

1101 gcgggtccctaagactctcgtgtgcagcctctggaaccaccctcagtggc 1150

1151 tataccatgcactgggtccgccaggtccaggaaggggctggagtgggt 1200

1201 ctcattccattactggaggtagcaacttcatacaatactcagactcagtga 1250
S N F I Q Y S - (SEQ ID NO: 28)

1251 agggccgattcaccatctccagagacaacgccaagaactcactttatctg 1300

1301 caaatgaacagcctgacagccgaggacacggctgtctattattgtgcgac 1350

1351 cgcccctatagcaccgcccta[!]tttgaccactggggccaggaaccctgg 1400

1401 tcaccgtctcctcagcctccaccaagggcccatcgggtcttccccctggca 1450

1451 cctcctccaagagcacctctgggggcacagcgccctgggctgcttgggt 1500

1501 caaggactacttccccgaaccgggtgaccgtgtcgtggaactcaggcgccc 1550

1551 tgaccagcggtgcacaccttcccggtgtcctacagtctcaggactc 1600

1601 tactccctcagcagcgtggtgaccgtgccctccagcagcttgggcaccca 1650

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1651 gacctacatctgcaacgtgaatcacaagcccagcaacaccaaggtggaca 1700
1701 agaaagttgagcccaaattctgtgacaaaactcacacatgccaccgtgc 1750
1751 ccagcacctgaactcctggggggaccgtcagtccttctcttcccccaaa 1800
1801 acccaaggacaccctcatgatctcccgaccctgaggtcacatgcgtgg 1850
1851 tggcggacgtgagccacgaagaccctgaggtcaagttcaactggtacgtg 1900
1901 gacggcgtggaggtgcataatgccaaagacaaagccgaggaggagcagta 1950
1951 caacagcacgtaccgggtggtcagcgtcctcacgtcctgcaccaggact 2000
2001 ggctgaatggcaaggagtacaagtgaaggtctccaacaaagccctccca 2050
2051 gcccccatcgagaaaaccatctccaaagccaaagggcagccccgagaacc 2100
2101 acaggtgtacaccctgcccccatcccggtgagctgaccaagaaccagg 2150
2151 tcagcctgacctgcctgggtcaaaggcttctatcccagcgacatcgccgtg 2200
2201 gagggggagagcaatgggcagccggagaacaactacaagaccacgcctcc 2250
2251 cgtgctggactccgacggctccttcttctctacagcaagctcaccgtgg 2300
2301 acaagagcaggtggcagcaggggaacgtcttctcatgctccgtgatgcat 2350
2351 gaggctctgcacaaccactacacgcagaagagcctctccctgtctccggg 2400

S P G

2401 taaatgatagatatc - (SEQ ID NO: 27)

K * end of heavy chain

204020-55299001

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Figure 4G Light chain coding sequence in the plasmid H19CLcpn

Eco RI
gaattccatgga 1000

1001 catgaggggtccccgctcagctcctagggctcctgctgctctgggtccgag 1050
M R V P A Q L L G L L L L W L R
Leader start

1051 gtgccagatgtgacatccagatgacccagtcctccatcctccctgtctgca 1100
G A R C D I Q M T - (SEQ ID NO: 23)
Processed N-term

1101 tctgtaggagacagagtcaccatcacttgccgggcaactcagagtgttag 1150

1151 taactttttaaattggatcagcagaagccaggggaagcccctacgctcc 1200

1201 tgatctatgatgcacccacttcgcaaagtgggggtcccatcaagggtcagt 1250

1251 ggcagtggatctgggatggatttcagtcctcaccatcagcagtcctgcagcc 1300

1301 tgaagatcttgcaatgtattactgtcaagcgagtatcaataccccgcttt 1350

1351 tcggcggagggaccagaatagatatgagacgaactgtggctgcaccatct 1400

1401 gtcttcattcttcccgccatctgatgagcagttgaaatctggaactgcctc 1450

1451 tgttggtgctcctgtgaataacttctatcccagagaggccaaagtacagt 1500

1501 ggaaggtggataacgcctccaatcgggtaactcccaggagagtggtcaca 1550

1551 gagcaggacagcaaggacagcacctacagcctcagcagcaccctgacgct 1600

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1601 gagcaaagcagactacgagaaacacaaagtctacgcctgcgaagtcaccc 1650

1651 atcagggcctgagctcgcccgtcacaaagagcttcaacaggggagagtgt 1700

S P V T K S F T R G Q C (SEQ NO: 30)

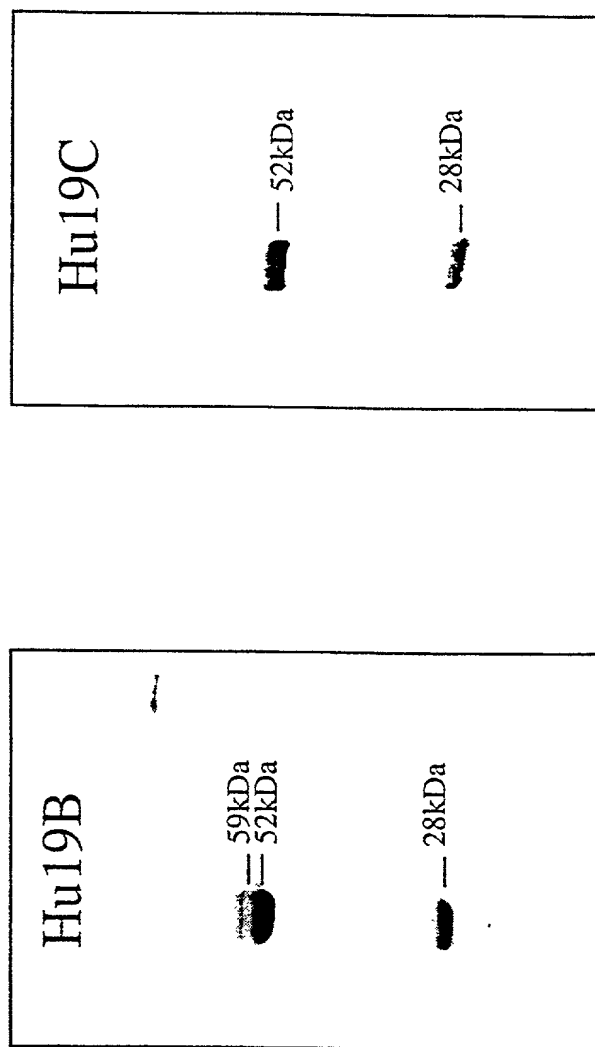
Xba I

1701 tagtgagatgatcctctagatctacgtatgatcagcctcgactgtgcctt -(SEQ NO: 29)

* end of light chain

20040220 09:59:00

**Fig. 5. COOMASSIE STAINED SDS-PAGE GEL
ANALYSIS OF 10UG HU19B AND HU19C
RESPECTIVELY UNDER REDUCING CONDITIONS**



**Fig. 6. SEPARATION OF HU19B GLYCOVARIANTS
BY ANION EXCHANGE CHROMATOGRAPHY**

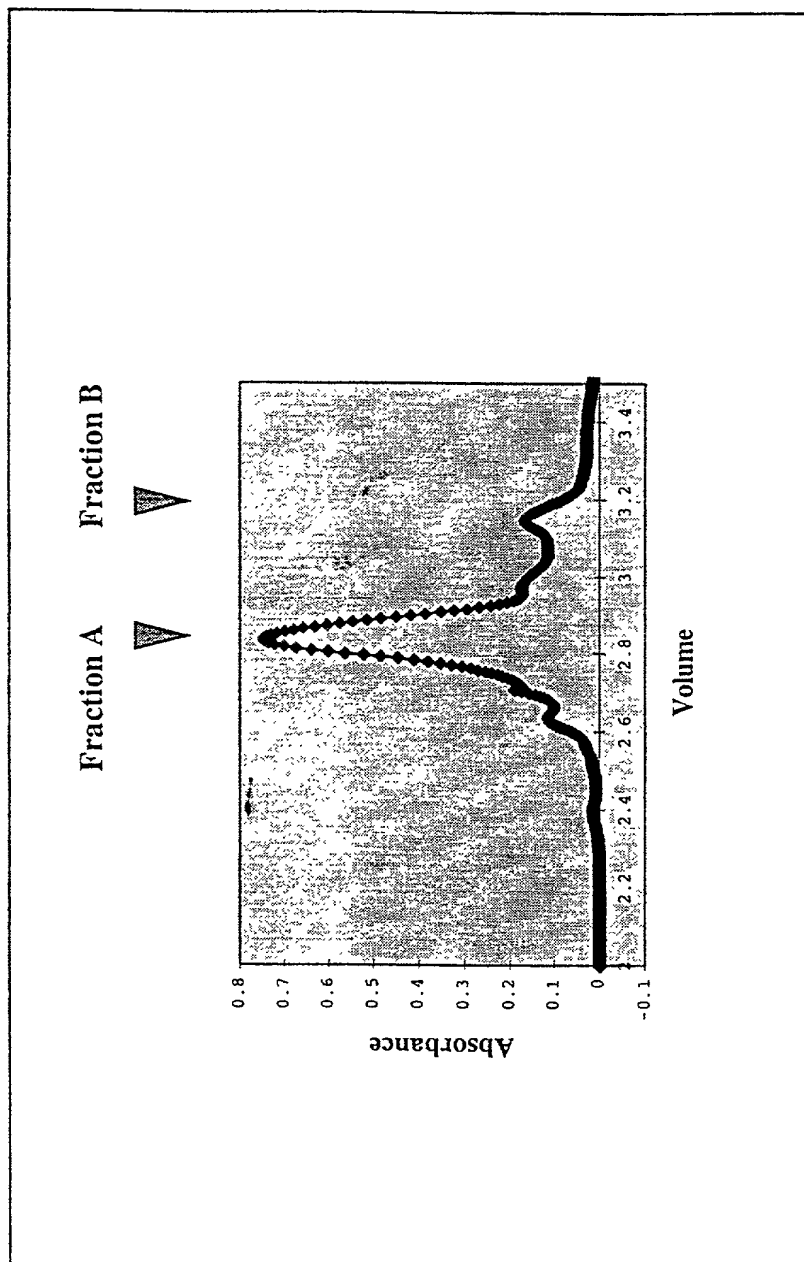
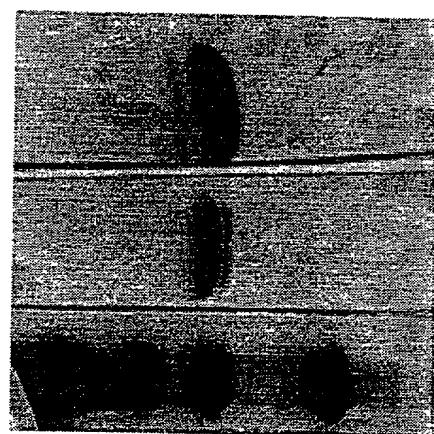


Fig. 7. SDS-PAGE of Glycosylation Variant of Hu19B

Fab



46 kD

30 kD

Glycovariant

Normal Fab